are considered in chapter 9. The relationship between animals and plants is termed coaction but chapter 10 is largely a very laudable treatise of the application of ecological principles to conservation. The underground parts of plants are treated at length. Then follow chapters dealing with the aerial environment—humidity, wind, and evaporation; temperature; light. Chapter 15 is a brief discourse on the use of plants themselves (phytometers) in studying the environment. The chapter on adaptation to water gives a basic presentation of ecological plant anatomy. The fact that plants and plant communities are indicators of the condition of the habitat is brought out in chapter 17. The reader will experience little difficulty in mentally transposing this chapter into plants and communities with which he is familiar. The last chapter introduces the reader to plant geography by briefly describing the climax formations of North America.

The book is well illustrated throughout by examples, tables, charts, line drawings, and photographs. Many of the topics are accompanied by directions for experimental procedure, as they were in the first edition. A few paragraphs at the first of the book outline a course with field work as the authors themselves conduct it. There is a bibliography of 1,035 citations for those who desire further work in the subject.

Water Culture of Plants—Ellis and Swaney[2]

G. T. Hastings

Water culture in its various forms has attracted much attention in the last few years. Descriptions of culture solutions and methods of growing plants in them have appeared in various leaflets,—here we have a small book that attempts to give complete descriptions. The authors describe methods of growing plants in liquid and in sand or cinders irrigated with the solutions. The descriptions are evidently based on much experimental work done by the authors as well as work done experimentally or commercially by others. In addition one chapter is devoted to the effects of plant hormones in stimulating growth and the work of Dr. Blakeslee in developing new forms of double

[2] Soilless Growth of Plants. Carleton Ellis and Miller W. Swaney. 155 pages, 55 figures, 3 colored plates. Reinhold Publishing Corp. 1938. $2.75.

chromosome number by the use of colchicine. The last chapter gives chemical formulas for solutions used at the New Jersey Agricultural Experiment Station, Purdue University Department of Horticulture, the United States Department of Agriculture and the Boyce Thompson Institute.

Those who may wish to experiment with soilless growth of plants at home with a few window plants will find the book as useful as will those who wish to use the methods described on a larger scale. The authors are both chemists, which probably accounts for such botanical errors as "green algae (a fungus often clinging to damp flower pots)," "fungi causing algae growth," "chromosomes . . . minute units which . . . attach themselves to the genes" and a few others. It is to be regretted that the copy for the book was not read by a botanist before publishing, as these errors detract from an excellent book that admirably fulfills the purpose for which it was written.